

## 1 Claims

2  
3 1. Filter element suitable for filtering electromagnetic  
4 waves, in particular a bandpass filter or band-stop filter,  
5 implemented also as a reflection filter or suchlike, con-  
6 taining

- 7 - a dielectric, cylindrical resonator (1), and  
8 - one or more lines (2, 3) which supply or, as the case  
9 may be draw off electromagnetic waves to/from the di-  
10 electric resonator (1);  
11 - with said lines (2, 3) terminating in a contacting  
12 structure (4, 4a, 4b);

13 c h a r a c t e r i z e d i n t h a t

- 14 - the lines (2; 3) together with their contacting struc-  
15 ture (4, 4a, 4b) form part of a printed-circuit board;  
16 - in that the resonator (1) is supported by said printed-  
17 circuit board (6); and  
18 - in that the resonator (1) is located spaced from the  
19 contacting structure(4, 4a, 4b);  
20 - with a recess (8) being provided in the printed-circuit  
21 board (6) in which recess the resonator (1) is located  
22 by means of a suitable securing means (7).

23  
24 2. Filter element, where applicable according to Claim 1,  
25 suitable for filtering electromagnetic waves, in particular  
26 a bandpass filter or band-stop filter, implemented also as  
27 a reflection filter or suchlike, containing

- 28 - a dielectric, cylindrical resonator (1), and  
29 - one or more lines (2, 3) which supply or, as the case  
30 may be draw off electromagnetic waves to/from the di-  
31 electric resonator (1);  
32 - with said lines (2, 3) terminating in a contacting  
33 structure (4, 4a, 4b);

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- 2       - a retention area or cover (5) is provided in close prox-  
3       imity to the contacting structure (4, 4a, 4b);  
4       - in that the resonator (1) is held in place by the reten-  
5       tion area or, as the case may be, cover (5); and  
6       - in that the resonator (1) is located variably spaced  
7       from the contacting structure (4, 4a, 4b);  
8       - with a recess (8) being provided in the retention area  
9       or, as the case may be, cover (5) in which recess the  
10      resonator (1) is located by means of a suitable securing  
11      means (7).

12  
13   3. Filter element according to Claim 1 or 2 characterized in  
14   that the recess (8) is dimensioned in such a way as to en-  
15   able the resonator (1) to be fitted or, as the case may be,  
16   mounted in a self-centering manner.

17  
18   4. Filter element according to one of Claims 1 to 3 character-  
19   ized in that an adhesive or silicon is used as the means  
20   (7) for securing the resonator (1).

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22   5. Filter element according to one of Claims 1 to 4 character-  
23   ized in that each line (2, 3) terminates in each case in a  
24   separately embodied contacting structure (4a, 4b).

25  
26   6. Filter element according to one of Claims 1 to 4 character-  
27   ized in that two or more lines (2, 3) terminate in a com-  
28   monly embodied contacting structure (4).

29  
30   7. Filter element according to one of Claims 1 to 6 character-  
31   ized in that the contacting structure (4, 4a, 4b) is embod-  
32   ied at least in sections as sickle-shaped.

1 8. Filter element according to one of Claims 1 to 6 character-  
2 ized in that the contacting structure (4) is embodied as an  
3 annulus.  
4

5 9. Filter element according to one of Claims 1 to 6 character-  
6 ized in that the contacting structure (4, 4a, 4b) is embod-  
7 ied as a circular-arc segment having a variable aperture  
8 angle ( $\alpha$ ) less than  $360^\circ$ ; being in particular approximately  
9  $160^\circ$  when there are two lines; being in particular approxi-  
10 mately  $110^\circ$  when there are three supply lines; being in  
11 particular approximately  $75^\circ$  when there are four lines.  
12

13 10. Filter element according to one of Claims 1 to 9 character-  
14 ized in that the contacting structure (4, 4a, 4b) has lar-  
15 ger dimensions than the cylindrical resonator (1).  
16

17 11. Filter element according to one of Claims 2 to 9 character-  
18 ized in that the contacting structure (4, 4a, 4b) has  
19 smaller dimensions than the cylindrical resonator (1).  
20

21 12. Filter element according to one of the preceding Claims  
22 characterized in that the resonator (1) is oriented sub-  
23 stantially to be centered relative to the contacting struc-  
24 ture (4, 4a, 4b).  
25

26 13. Filter element according to one of the preceding Claims  
27 characterized in that the resonator (1) has an operating  
28 frequency above 18 GHz.  
29

30 14. Oscillator, in particular for radar systems, LMDS distribu-  
31 tion services, or satellite receivers, containing a filter  
32 element for filtering electromagnetic waves according to  
33 one of the preceding Claims.